

ABSTRACT OF THE DISCLOSURE

A vehicle electrical system is disclosed having a plurality of electrical subsystems for supplying power to different component groups of the vehicle. A voltage regulator is provided each subsystem for setting the voltage on each electrical subsystem independently of the other electrical subsystems. One such subsystem includes a battery having a grounded terminal and an ungrounded terminal. An electrical system controller including data processing capacity provides control of the voltage level on the charging subsystem through a charging regulator having an output connected to the ungrounded terminal of the battery and a control input. An electrical power generator is connected to energize the charging regulator. Instrumentation connected to the electrical system controller provides measurements of current discharged from the battery, current delivered to the battery, and battery temperature. A program residing on the electrical system controller for execution, utilizes battery temperature, battery temperature rate of change and measured current discharged as inputs to an algorithm for dynamically setting a control signal value. The generated control signal is applied to the control input of the charging regulator.